

## LNG AND LPG

Indonesia remained the world's leading exporter of LNG, with about 22.9 percent market share in the world market and over 33 percent share in the Asia and Pacific markets. Currently, Indonesia has the capacity to produce a total of 31.6 million MT of LNG at the Arun plant in North Sumatra and the Badak (Bontang) plant in East Kalimantan. However, actual production in 2002 reached only 26.2 million MT, compared to a peak of 29.8 million MT in 1999. LNG is still one of the significant foreign exchange earners. LNG exports were valued at \$5.6 billion in 2002, a 3.7 percent increase if compared with \$5.4 billion in 2001. Japan remained Indonesia's top market for LNG, with 69 percent of the total, followed by South Korea (19.4 percent) and Taiwan (11.6 percent).

### World LNG Trade in 2002

Exporting Country	Billion M3	%
Indonesia	34.3	22.9
Algeria	26.9	17.9
Malaysia	20.5	13.7
Qatar	18.6	12.4
Australia	10.0	6.7
Brunei	9.1	6.1
Oman	8.0	5.3
Nigeria	7.8	5.2
UAE	6.9	4.6
Trinidad	5.3	3.5
USA	1.7	1.1
Libya	0.6	0.4
<b>Total</b>	<b>150.0</b>	<b>100.0</b>

Source: BP Statistical Review

Indonesia signed its first long-term LNG contract in 1973, with the first shipment from Bontang in 1977 and the first shipment from Arun in 1978. Indonesia signed a number of additional LNG contracts between 1973 and 1995.

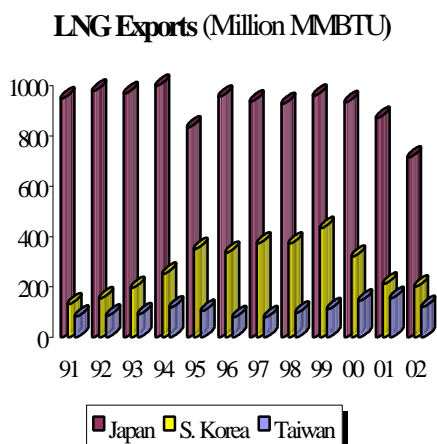
Indonesia's LNG exports are under long-term contracts between Pertamina and its customers.

### New LNG Sales and Contract Extensions

The benchmark prices that China negotiated in late 2002 with Australia and Indonesia (between \$2.40-\$3.00/mmbtu) for the Guangdong and Fujian LNG terminals confirmed a downward pressure on LNG prices. Japan (the world's largest LNG importer), whose import prices for 2002 averaged \$4.27/mmbtu, took particular notice. As a result, Indonesia's traditional LNG markets (Japan, South Korea and Taiwan) are eyeing new sources of LNG and lower prices. Indonesia's LNG marketing abilities will be tested as it tries to extend 12 mmtpa in Japanese contracts due to expire in 2010.

As a result of these changes, Indonesia seeks alternative marketing opportunities in the U.S. to protect against contract changes with its existing Asian buyers. During the second half of 2003, the GOI signed an MoU with Marathon to supply 6 MT of LNG to a proposed West Coast U.S. or Baja California LNG receiving terminal. Similarly, BP signed a Heads of Agreement with Semptra Energy in December 2003 to supply 3.7 MT of LNG annually to the West Coast or Baja beginning in 2007.

The news on LNG sales hasn't been all good. In July 2003, Taiwan utility Taipower chose Qatar's Rasgas project over Tangguh to supply 1.7 MT per year to its Tatan power plant.



## Arun

The Arun LNG plant is operated by the PT Arun Natural Gas Liquefaction Company, of which 55 percent is owned by Pertamina, 30 percent by Mobil LNG Indonesia Inc. (an ExxonMobil affiliate) and 15 percent by Japan Indonesia LNG Company (JILCO). ExxonMobil/BP Migas is the sole supplier of natural gas to Arun, whose production capacity is now about 6.4 MT per annum. ExxonMobil has extracted about 90 percent of the gas reserves in its Arun gas field and gas deliveries to the six-train PT Arun LNG plant have started to decline. Two LNG trains were shut down in 2000 with the expiration of the Arun I contract and, as the remaining contracts expire, additional trains will be shut down. The Arun facility is expected to produce 3.0 MT in 2005, 1.2 MT in 2010, and will discontinue operations in 2014.

Due to the normal decline in the Arun area fields there is insufficient gas to supply all fertilizer plants and still supply gas to PT Arun for the manufacture of LNG to meet Pertamina's contracted sales. The government may have to acquire 8-10 LNG cargoes from abroad

in 2004 if it decides to maintain like-kind gas supply to fertilizer plants and still comply with its LNG contractual requirements.

Continued gas production declines in the Arun area fields will result in lower LNG sales and deliverable cargoes: from 113 cargoes in 2002 to about 60 cargoes in 2005. Based on the expected rate of decline, there will normally be two LNG trains in operation between 2005 and 2008.

The Arun area fields include: the original Arun field; the South Lhoksukon A and D gas fields, located 15 kilometers from Arun; the Pase A and B gas fields, located north of Arun; and the North Sumatra Offshore (NSO) gas field. The NSO field sits 100 km offshore from the Arun LNG plant.

## Bontang

The eight-train (A through H) Bontang facility in Badak, East Kalimantan has 21.6 million MT of production capacity.

The plant is operated by PT Badak NGL Company, which is 55-percent owned by Pertamina, 20-percent by Vico (which is 50-percent owned by BP), 10-percent by TotalFinaElf, and 15-percent by Japan Indonesia LNG Company (JILCO). Gas is supplied from production sharing arrangements between Pertamina, Unocal, Vico and Total. LNG production from the Bontang facility in 2002 declined to 19.9 million MT from 21.36 million MT in 2001.

In 1995, Pertamina signed two 20-year contracts for Bontang's "H" train with Korea Gas Company and Chinese Petroleum Corporation (Taiwan).

Indonesia advanced plans to build a ninth LNG train (train I) at the Bontang facility. The government has in principle given the green light to Pacific Oil and Gas Ltd to build and operate train I. Hong Kong Pacific Oil & Gas company plans to market LNG to Jiangsu province. A final decision on Train I is expected in 2004.

Toward the end of 2003, Bontang experienced a variety of production problems that constrained its ability to provide gas for both LNG production and feedstock for national fertilizer plants in East Kalimantan. At current production levels, Bontang will be about 19 cargoes short of its LNG contract requirements (133 cargoes) in 2004 if the PSCs continue gas supplies to the Pupuk Kaltim fertilizer complex. Pertamina is trying to restructure its LNG supply commitments in order to maintain fertilizer gas supplies. However, the PSCs and Pertamina may purchase between 2-6 LNG cargoes abroad in 2004 to meet Bontang's LNG contracts.

### **Tangguh**

BP is the major shareholder and operator of the Tangguh LNG project, which encompasses three PSCs in the Berau-Bintuni Bay region of western Papua. The Tangguh gas fields contain 14.4 trillion cubic feet TCF) of proven and certified natural gas reserves. The planned LNG processing plant will produce seven million tons of LNG per year from two initial processing trains. In April 2003, BP selected a group led by Halliburton's KBR (Kellogg, Brown and Root) unit to build the \$1.4 billion LNG plant. BP Indonesia holds a 37.16% stake, with the balance shared by CNOOC (16.96%), Mitsubishi (16.30%),

Nippon (12.23%), KG (10.00%), and LNG Japan (7.35%).

The Indonesian government and BP have obtained market commitments for 7.65 MT of Tangguh's LNG. In August 2002, the project won the contract to supply 2.6 MT of LNG per year to China's Fujian province for a 25-year term beginning 2007. It wasn't until August 2003 that the project found another committed buyer – South Korea's K Power and POSCO – for 1.35 MT of LNG per year for a 20-year term beginning 2005. In December 2003, the project signed an HoA with U.S. Sempra Energy to supply 3.7 MT of LNG for a 20-year term beginning in 2007 (until Tangguh becomes operational LNG will likely come from the Bontang LNG facility in East Kalimantan). Tangguh's developers also hope that a PLN-proposed LNG regasification facility in Java could be another target for LNG sales. In October 2003, BP hinted that impending new LNG contracts with Japan would round out the project's initial LNG capacity and make Tangguh financially viable; however, the company has ordered long-lead equipment and expects the project will receive a final go-ahead in 2004.

### **Sulawesi - The Fourth LNG Center?**

In 2003, Pertamina continued exploring its options to develop the Matindok block in Central Sulawesi. Matindok consists of the Donggi gas block, which is operated by Pertamina, and the Senoro-Toili gas block, which is jointly operated by Pertamina and Medco's Exspan Nusantara. Delineation results in mid-2003 revealed less-than-expected recoverable gas reserves of 3.4 TCF, with additional potential as high as 18 TCF.

Despite the disappointing news, Pertamina said it would commence a new drilling campaign at Donggi in early 2004 in an effort to increase the block's proven reserves and justify plans to develop an initial two-train LNG production facility at Donggi.

Donggi's potential has captured the interest of foreign companies, including ChevronTexaco, Royal Dutch/Shell, Marathon Oil, Mitsui, CNOOC, PetroChina and Petronas, all of whom held talks with Pertamina during 2003 on possible joint ventures. Marathon and Pertamina discussed a possible agreement to supply LNG from Donggi to the U.S. West Coast/Baja California, though progress has been delayed pending certification of additional reserves.

Rentech, as well as Japan's Mitsui, have approached Pertamina separately about developing a possible gas-to-liquids (GTL) facility at Donggi. In March 2003, Rentech conducted a feasibility gas-to-liquid study for Central Sulawesi and is in discussions with Pertamina to finalize an HOA to develop a 15,000 bopd GTL plant at Donggi. GTL, which combines high-technology with abundant natural gas reserves to produce a range of clean, synthetic fuels, could be an alternative project should Donggi's gas reserves be too small to make an LNG project economically viable.

plant reported no LPG production from its LPG extraction plant in since 2000, whereas it produced 216 thousand MT in 1999. Indonesia exported over 60 percent of its LPG production in 2002, valued at just under \$411.5 million, to major Asian markets: Japan, China, Taiwan, Philippines, Australia and Singapore.

## **Liquid Petroleum Gas**

Total liquid petroleum gas (LPG) production declined slightly in 2002 to 2.1 million MT from 2.2 million MT in 2001. LPG production at five of Pertamina's refineries rose 5.4 percent to 814.2 thousand MT in 2002 from 772.1 thousand MT in 2001. The Arun LNG